# NEW IN TROLLEY LAND

## We Have Beaten the World In Electric Railroading.

## AND THE WEST LEADS THE EAST.

### Some of the Things They Have Done Out There.

**Towns Linked Together—Luxury and Speed in Travel Offered Such as Are Unknown Here—Problems of City Traffic Solved—Freight Carrying Developed—Cheap Fares Tested and Found Neither Popular Nor Profitable—A Great Record for Experts to Look Back On.**

Once a year the street railroad men of the United States meet in convention and review the progress they have made in the preceding twelve months. For twenty years, beginning when street railway traffic occupied by no means the commanding place it now holds in this country's business, they have been thus comparing notes, and each year they have had a better record to look upon.

The twenty-first annual meeting of the American Street Railway Association, begun last Wednesday in Detroit, found its members able to say that in no other country in the world has electric railroad travel reached the high level of development it has attained in the United States.

There are more cars here, they are of better design and workmanship, the roadbeds are smoother, the speed attained is higher, the country is more generally covered by electric railroads, and the men who run them are of a higher order of intelligence and are better paid than anywhere else in the world.

Particularly has the interurban service been improved. That has been the most striking feature in last year's development and is likely to be in the next year's

To that phase of electric railroading the association devoted a great deal of consideration. Its organ, the *Street Railway Journal*, makes the consideration of this interurban and long distance traffic the feature of the review of the year's work and congratulates the men who have developed it upon their success.

Both in handling passengers and freight traffic the interurban roads, both trolley and third rail systems, accomplished new feats last year. Cars were improved to a pitch never dreamed of by the pioneers in electric railroading, and speed was increased. One hundred miles an hour is no longer something to look forward to, but a record frequently achieved.

The West has led the way and the East is behind in this branch of American industry. Many of the latest things in cars and appliances pictured in the *Street Railway Journal's* review, some of which are reproduced below, have never been seen in New York. In fact, as an interurban electric railway centre, the metropolis of the Empire State is still far behind Detroit and many other Western cities of one tenth its population and a much smaller ratio of importance.

DETROIT A MODEL OF TROLLEYDOM.

Take Detroit, to which by reason of the meeting of the association there the attention of railroad men has been especialy directed.

With twenty-nine square miles of area and a population of about 325,000 persons, Detroit has now 187 miles of city street railway lines and is now the terminus of about 400 miles of electric interurban railroads. Some of the latter were the first electric long-distance roads in the United States.

Detroit has tried the so-called three-cent fares and has not found them a success from the point of view of the stockholder nor to a noteworthy degree from the point of view of the street car patronizing public, but it has solved the rush-hour problem, that bugbear of city railroad men, as far as it is possible for any city to solve it, and it has evolved a system of fair dealing between employers and employed bettered nowhere, unless perhaps by the Metropolitan Street Railway Company here.

It is using trolley cars which are both sumptuous and commodious. It has made street car shops and car barns decent-looking structures set amid flowers and well-kept lawns, instead of the usual grimy structures in wastes of dust and gravel. Last, but not least, it has developed freight traffic by electric railroad to an extent undreamed of here.

ITS LONG-DISTANCE TRAFFIC.

By the Detroit United Railway you can travel directly to any town within seventy miles of the city. The service covers more than sixty of these towns, to any one of which there is an hourly service.

The cost ranges from 75 cents for a round trip of sixty-four miles, to a dollar, for a sixty-eight mile trip, one way. The distance varies from seventy-three miles in one direction to nine and ten.

The longest ride lasts a few minutes under three and one-half hours. The shortest of the long-distance runs is thirty minutes, on a seven-mile stretch. The speed schedule averages twenty miles an hour, including stops, with occasional bursts of speed in the open country of as high as fifty miles an hour.

The population of the city proper by the census of two years ago was 285,704. By this system of electric railways the city taps a further population of 130,255 in nearby townships, to say nothing of a scattered rural population of at least 20,000 more. So that to a rural class equal in number to more than half its own residents this electric system brings city advantages far nearer than the steam railroads ever did.

FREIGHT AS WELL AS PASSENGERS TAKEN.

The conditions around Detroit have been favorable to interurban railroading, but not more so than to scores of Eastern cities portation of freight as well as passengers by electric railway.

RUSH-HOUR PROBLEM SOLVED.

In the estimation of experts there is no characteristic of the Detroit street car service proper which has been more worthy of admiration than the handling of the difficult rush-hour problem.

It is the general testimony of visitors to the Michigan city that there is no other large community in this country where so great a proportion of the passengers carried in the rush hours gets seats. This is despite the fact that by the terms of the company's franchise it has to sell workmen's tickets, good between the hours of 5:30 and 7 in the morning and 5:15 and 6:15 in the evening, at eight for a quarter.

Of course, this increases the tendency to crowd all the traffic of the evening rush hour literally into an hour, and of the morning into a little over that time, and in this respect the workman's ticket has been anything but a boom. But by skilful arrangement of the schedule the crowding is reduced to a minimum.

During the evening rush hour there is 125 per cent. more cars in operation usually than at midday; in the morning rush the increase is 75 per cent.

This seems simple. Only railroad men understand the difficulty of carrying out this arrangement. It is a fact that the making of time schedules to meet these requirements would drive to distraction any ordinary person who had not long experience in doing this.

It means an enormous number of "tripper" workers, practically extra hands who must earn better than mere living wages if the company is to keep them in its employ.

LOW FARES A FAILURE.

About car fares in Detroit, it seems there has been a great deal of misapprehension. There has never been a three-cent fare in the city despite statements to the contrary, and there is not now. Nor is there anything in the experience of the street car companies there to show that a cash fare of three cents could ever be made the basis of successful operation.

By the franchise under which part of the system was built it is compulsory to issue tickets at the rate of eight for a quarter, or about three and one eighth cents each between the hours of 5 o'clock in the morning and 8 in the evening. At other times the fare was to be five cents.

The company which operated these low-fare lines was merged in the present combination, or before long it would have gone into the hands of a receiver. Under the present conditions the profits of the five-cent lines supply the deficit on the cheaper lines, and the combination, by having only one set of operating officers, runs those lines more cheaply than they could be managed otherwise.

PUBLIC DOESN'T CARE MUCH ABOUT THEM.

Last year of all the passengers carried in Detroit, 33 per cent. rode on these eight-for-a-quarter tickets. Twenty per cent. was carried on the low-fare lines, and 12 per cent. on the other lines in accordance with the "workman's hour" rule. Now the mileage of the low-fare line is 57.9 and that of the high-fare line 129.9.

It can readily be seen, therefore, that the low-fare line has not only failed to attract by virtue of the low fares a larger proportionate share of the business in dollars and cents than the high-fare lines, but has failed even to carry as many passengers in proportion to mileage of track as the high-fare lines have done at five-cent rates.

EXPERT CONCLUSIONS ON THE SUBJECT.

Experts at last week's conference who have studied this question of car fare in Detroit reached these conclusions:

First—The greater part of the street-car riding public cares very little for saving fares.

Second—The necessity of purchasing tickets to obtain low fares, is sufficient to counteract much of the advantage of the low fare in the public mind, for the public seeks the convenience of the moment and saving of time rather than a saving of 1½ cents in carfare.

Third—The low fares carry so little weight with patrons that there is no increase of riding due to the reduction of fares below 5 cents; hence there is nothing in the argument that an increase in passengers will follow reduction of fares below 5 cents.

Fourth—There is always a happy medium. If passengers were charged $1 per ride the income, gross or net, would not be as great on street railways as it is now in America. The nickel seems to be the happy medium.

A MODEL MERIT SYSTEM.

The company manages its 1200 conductors and motormen largely by the aid of a merit system, which it established about a year ago. At that time the old system of suspensions without pay for misconduct and violations of rules was abandoned and the present system took its place. When an employee offends now he gets a black mark. The company keeps a complete record of these marks, and at the year's end posts the names of men with clean certificates in its barns. Promotion is made according to record. Sixty bad marks entail dismissal but for a faultless three months of service ten bad marks are deducted from a man's previous demerit record.

It is contended for this system that it prevents favoritism and is as near absolute justice in the recognition of merit as any than can be devised.

OLD-TIME CARS OUTCLASSED.

In the matter of appliances for building and maintaining its interurban tracks Detroit has invented many of its own and adapted others. Its folding pile-driver, of which a sketch is given here, is a wonder which only an old-timer in railway building can appreciate, and it is only one of many such new constructions which the needs of long-distance electric roads have brought out.

Equally they have wrought a great change in the cars themselves. To carry long-distance passengers profitably the old style small car with its side seats or its ten rows of double crosswise seats is impracticable. The result is the construction of some of the giants of forty fifty and sixty feet long now seen in interurban railways throughout the West.

LUXURY IN THE NEW TYPES.

Moreover, from the passenger's point of view, the old-style car is useless. Men and women who start on a three-hour trolley ride are no longer content with the scant comfort of such cars as are good enough to sit or stand in during a short journey from home to workshop. The passenger must be tempted to ride.

So the interurban cars are very different from the old type. Compared with these they are not only as the giant to the pygmy, but also as the parlor to the cell. The whole scheme of construction in these new types of cars is changed. Some have the side doors and the side aisle, and these are becoming more and more popular in the West. There are others with chairs instead of seats, for in long-distance riding passengers will not be packed like sardines any longer, as has been demonstrated in Brooklyn.

EVEN TROLLEY SLEEPERS NOW

Parlor cars have been unprofitable here and in other cities. The trips are too short to make it worth while for passengers to pay an extra fare for their use. But when it is a case of a two or three-hour ride it is different altogether, and a feature of the interurban lines about Detroit and elsewhere is the luxury of some of the new cars in service.

Now systems of heating have been introduced for them. Many are kept warm by the hot water system in use on some of the steam railroads. Others have a system by which hot air is introduced from the vestibules, a plan found to be far better than that of putting electric leg scorchers under the seats, such as is a nuisance in many of the cars here.

Still another innovation is the combination parlor and sleeping car. There are some of these in Detroit, but there are several in use on the long distance electric railroads of Indiana, and it is predicted that the time is not far distant when this type of electric car will be scarcely less common than the sleeping cars on the steam railroads.

TRAINS AND GIANT CARS.

On the long distance runs in Illinois it is the custom now to run the cars in trains. At a casual glance there is very little difference between those trolley trains and the steam railroad trains, save the trolley pole projecting from the roof of the cars to the feed wire. The cars look just as large and almost as heavy.

In Ohio they are running, by the third rail system, giant single cars compared with which the biggest cars in use in New York are mere babies. The Ohio cars are sixty feet long over the buffers and have a seating capacity for 108 persons. The side panels containing the windows can be taken out in the summer, leaving the cars open. These cars are especially built for high speed electric railways and for long distance runs.

TROLLEY ROADS AS FREIGHT CARRIERS.

But fully as remarkable as the developments in trolley passenger service has been the rise of a freight business done by the electric railroads in the West. Here in New York there has recently been installed a street railroad express package service and that was hailed as a great step in extending the facilities offered by the trolley companies.

Such a service is an old story in the western half of the United States. A still greater and more recent development has been a full freight service on the interurban roads. Detroit probably does more of this business than any other electric interurban centre in the country, and the business is growing rapidly.

MILK CARS ON THE ROADS.

To take a single instance it is probable that as much if not more of the city's milk supply is forwarded by trolley than by steam railroad. All along the lines of the interurban roads are small freight stations used principally for farm produce and the sum of the freight transferred from these makes a great showing.

The growth of the trolley freight business has been due chiefly to two causes and they are the same as those which have so largely built up the passenger traffic. First of all, electric traction lends itself to profitable operation of small trains or single cars at frequent intervals, whether at high speed or low speed. Steam does not.

FREQUENT STOPS HELP FARMERS.

The most frequent train service gets the business if it can land the passenger at his destination in anywhere near the same time. In fact, experience has proved that a very great increase in speed must be offered to a passenger to induce him to wait for infrequent trains. Moreover, the frequent service creates a habit of riding which makes business never existing with infrequent service. It is through this created business that electric interurban roads have been able to thrive.

The trolley roads get the freight traffic for the same reason, and also for another equally important in the passenger department. The steam railroad train whizzes past the farmhouse, where the farmer has milk, fresh vegetables and other perishable freight waiting to get to the city. The trolley freight car will stop at the door or at the nearest crossing, and the farmer saves the time of his horses and men by not having to send them probably several miles to the nearest station.

DETROIT HAS A TROLLEY FREIGHT DEPOT.

Besides all this, from the merchant's point of view, the frequency of express service on the electric roads is conducive to building up business, because it makes it possible for the grocers and merchants in towns several miles from the city to order goods in smaller lots and more frequently than if they were dependent on steam railroad service.

In the seventy-mile area around Detroit small trolley freight stations, such as are shown in the picture with this article, are dotted along the road, one every half mile or so. Special milk trains are run frequently, in addition to the ordinary freight cars.

Competition is bitter at points where both steam and electric roads have freight depots. The steam railroads, having seen the electric interurbans take their local passenger business and create a lot more, are now making a hard fight to retain local freight business, but without much success.

In Detroit itself the interurban electric companies have recently got together and erected a joint express depot to help along their wayside freight business. The companies interested issue a card, something larger than an office calendar, giving an alphabetical list of towns reached by electric express and the time at which express cars leave for the towns and wayside stations enumerated. Goods must be left at the electric depot an hour before the cars leave.

A HIGH-SPEED ELECTRIC RAILWAY.

The speed record for long-distance electric runs so far is held by the Aurora, Elgin and Chicago Railway, a sketch of one of whose trains is shown above. The equipment of this road is designed for a maximum speed of sixty miles an hour, and its common schedule will be from twenty to twenty-five miles an hour.

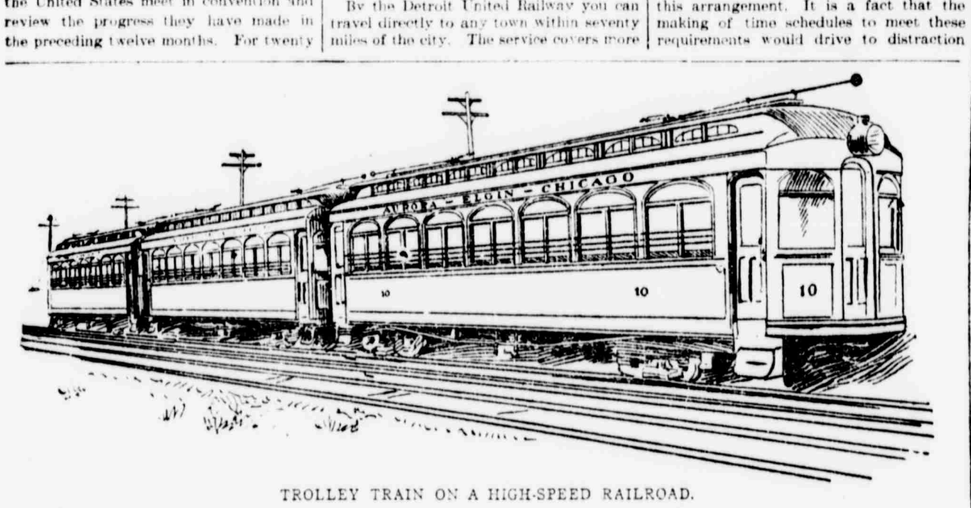
This road is practically the first electric railway in this country to give a through service between cities thirty-eight miles apart, which will equal or exceed the best speed made by the steam roads covering the same distance. It is an illustration also of the causes which are bringing electric railroads into general use.

While the through traffic between such cities as Aurora and Chicago is not large enough to justify the operation of steam trains at half-hour intervals, it has been sufficient even at the opening of this new road, to occupy a majority of the seats in the cars running between Chicago and Aurora at half-hour intervals, even though the schedule of the electric road is not as fast as that ultimately contemplated.

FUTURE OF THE TROLLEY ROADS.

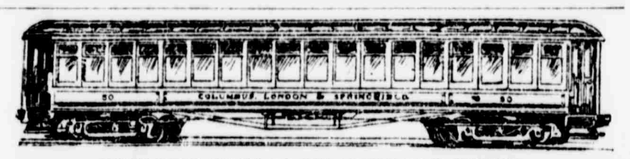
Such experts as met at Detroit assert that the electric railroad is rapidly completing its development. It was never intended as a competitor for through business with the steam railroads. They believe that it is the destiny of these gradually to decrease the number of local stops and increase the size of train units, leaving to the electric roads the work of carrying the local traffic, both passenger and freight.

The electric roads would thus act as feeders to the steam roads, carrying at a profit the class of business which steam roads can carry only at a loss and the efficiency of the steam roads as carriers of through business would be increased because they would be relieved of the trouble of local traffic.

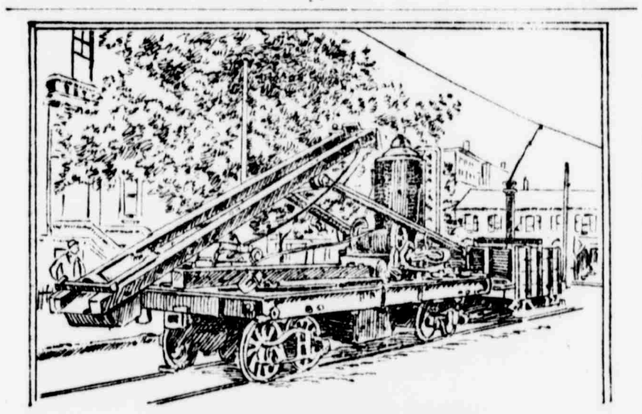



TROLLEY TRAIN ON A HIGH-SPEED RAILROAD.

END OF AN ELECTRIC PALACE CAR.

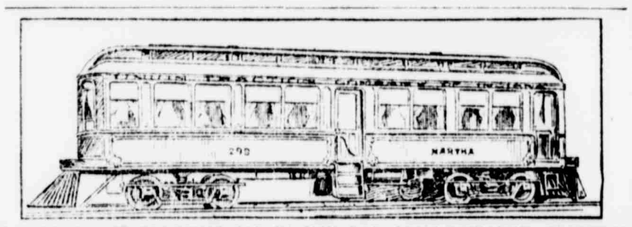



SIXTY-FOOT GIANT OF THE THIRD-RAIL SYSTEM.
THE SIDE PANELS IN THIS TYPE ARE TAKEN OUT IN THE SUMMER, LEAVING IT AN OPEN CAR

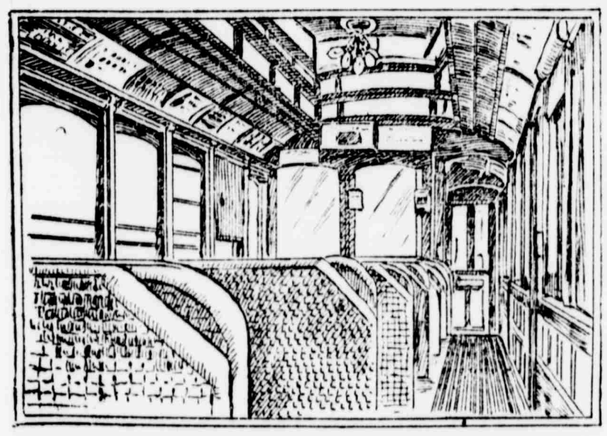


THE TROLLEY PILEDRIVER, FOLDED.

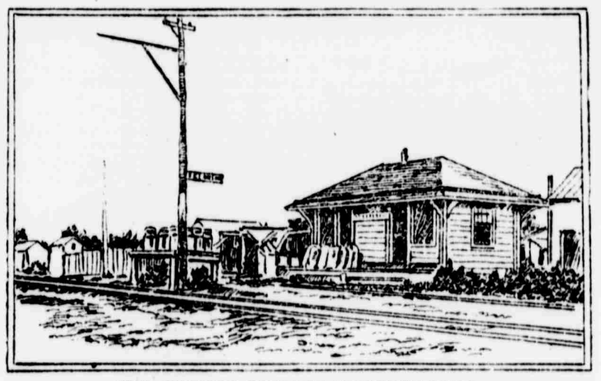
LOADING THE TROLLEY MILK TRAIN.




A PARLOR AND SLEEPING CAR IN USE FOR LONG-DISTANCE ELECTRIC RIDING IN INDIANA.



THE SIDE-AISLE AND SIDE-ENTRANCE CAR.



THE WAYSIDE TROLLEY FREIGHT HOUSE.

# THE LOSSES BY FOREST FIRES.

### *SIXTY LIVES AND $100,000,000 OF PROPERTY LOST EVERY YEAR.*

**A Fire in 1871 That Extended Across Three States and Burned to Death 1,000 Persons—Another in 1894 That Burned 418 Persons and Destroyed Hinckley and Five Other Minnesota Villages.**

WASHINGTON, Oct. 11.—The reports of recent forest fires in Washington, Oregon, Wyoming and Colorado, in which many lives were lost, will add to the interest in a special study on the subject which has engaged the Bureau of Forestry for several years. The results of this study, in the form of a bulletin entitled "Forest Fires," by Alfred Gaskill, will be published soon. By impressing the public with some idea of the peril it suffers from forest fires, and the enormous damage they do, the bureau hopes to induce more effective legislation in suppressing them.

Investigation has shown that in an average year, sixty human lives are lost in forest fires, $25,000,000 worth of real property is destroyed, 10,274,089 acres of timber land are burned over and young forest growth worth, at the lowest estimate, $75,000,000, is killed. A special canvass of the country by the Department of Agriculture in 1891 discovered 12,000,000 acres of timber land destroyed by fire.

These figures are mere estimates, which fall far short of showing in full the damage done. No account at all is taken of the loss to the country due to the impoverishment of the soil by fire, to the ruin of water courses and the drying up of springs. Even the amount of timber burned is very imperfectly calculated, and the actual quantity destroyed is far in excess of that accounted for. Forest fires in this country have grown so common that only those are reported that are of such magnitude as to threaten large communities. The lumbering industry in remote sections of the country may be ruined and people forced to flee for their lives without a mention of the disaster beyond the places near where it occurred.

The fires that burnt this year in Washington and Oregon were uncommon only in the number of lives lost. The burning of logging and mining camps and farm buildings, the loss to the country in the destruction of timber and young tree growth, is of yearly occurrence. Every fall, not only in Washington, Oregon, Colorado, and Wyoming, but up and down the Pacific Coast and all over the Rocky Mountains country fires burn great holes in the forests and destroy the national wealth. The air of the mountains over hundreds of miles is pungent with the smoke of conflagration, and navigation on Puget Sound has often been impeded by smoke. The following comment by Dr. Henry Gannett of the United States Geological Survey should convey a fair idea of the damage done in the State of Washington:

"In less than a generation two-fifths of the standing timber has been destroyed in one of the richest timber regions on the continent, and of the destruction more than half has been caused by fire. Assuming that the timber would, if standing, have the value of 75 cents per thousand feet, not less than $30,000,000 worth has gone up in smoke, a dead loss to the people of the State."

According to the bureau's records, the most disastrous forest fire in the history of this country occurred in October, 1871, simultaneous with the burning of Chicago. It extended all across northern Michigan and Wisconsin and into Minnesota. At least 1,000 persons were burned to death and 15,000 were made homeless. The property loss has never been calculated. The Hinckley fire of 1894, which destroyed Hinckley and five other Minnesota villages, burned to death 418 persons, destroyed $750,000 worth of farm and town property, and about 400 square miles of forest.

A fire in southeast Michigan in 1881 burned the forest on forty-eight townships, destroyed $2,000,000 worth of other property, burned to death 125 persons and made homeless 5,000. Another Michigan forest fire, which occurred in 1896, made homeless 2,000 persons and destroyed town and farm property worth $1,250,000. Wisconsin lost by fire in May, 1891, 100 square miles of forest and other property worth $2,000,000. In 1894, in Wisconsin, thirteen persons lost their lives and 3,000 their homes, and $2,000,000 worth of town and farm property was destroyed in the Phillips fire.

The enumeration of great forest fires could be extended almost indefinitely. One feature, however, is common to them all: They were small fires before they grew uncontrollable, and with little trouble might have been extinguished. For example, the Hinckley fire smoked as a ground fire for weeks and nobody paid it serious attention. But one day the wind rose and fanned the smouldering embers into flame, the flame caught in the dry underbrush, leaped into the trees and became a fire of so terrible a volume that no human power could stay it.

Legislation, even in the East, has done little toward solving the forest-fire problem. Pennsylvania, Minnesota, Massachusetts and New York are possible exceptions. The best forest-fire laws are probably those of Pennsylvania, which makes an annual expenditure of $15,000 in support of them. State constables serve as fire wardens in their townships and receive extra pay for their services. Minnesota, brought to a sense of responsibility by disasters, of which the Hinckley fire was the most terrible, has established an efficient forest-fire system. Massachusetts has had good legislation in the matter. The New York forest-fire laws, though generally limited in their effect to State reserves and parks, have brought good results. West of the Rocky Mountains little is done toward the suppression of forest fires, except by the forest rangers on Government reserves, who are employed by the Department of the Interior.

The creation of a sentiment against forest fires is the first step toward their suppression. Legislation is necessary, but it must be accompanied by the cooperation of the people and the officers charged with the enforcement of the law. The fall and the early spring, before vegetation has begun, are the dangerous seasons for forest fires in most densely wooded parts of the country. At such times special precautions should be taken, and the people should be kept alert by constant reminders of the peril. An excellent idea, as Mr. Gaskill suggests, is to placard trees along roads and trails with notices of the danger and warnings of penalties to be incurred by those who violate the fire laws.

## *THE "OYSTERS" SIGN FOUND.*

**A Relic Famous in the Sporting and Pugilistic Life of Old New York.**

HARTFORD, Oct. 11.—The old "Oysters" sign, which had a notable career in New York pugilistic and sporting circles for fifty years, has just been found in this city. It has been here since 1880 in the collection of A. E. Brooks, but not a half dozen persons have known of its whereabouts.

The sign was painted for Ben Sprague, an oyster and fish dealer in Union market on Houston street, New York, back in 1832, by William Fuller, who came to this country from England with George Kensett. The two men brought with them the glories of Pierce Egan life in London and gave decided impetus to pugilism in the United States.

Kensett's first fight was with Ned Hammond for $500 a side. The fight came off at the Union Racecourse, Long Island, Dec. 7, 1826, and ended in a draw. "Prof." Fuller fought with Bill Madden on Long Island in 1828, polishing his antagonist off in ornamental style.

After the sign was painted it was hung in the Weary Wanderer's Hotel on Columbia street. It was stolen from the market and found by Tom Seicor, who fought Sullivan, Jan. 24, 1842, in a place kept by Bill Ford.

It was given to Abe Vandeger, one of Seicor's friends and backers in his fight. Afterward Yankee Sullivan became its owner and it was kept in the Sawdust House in Division street, which Sullivan managed.

Chris Lilley took it away, but returned it to Sullivan when the latter opened his crib at 9 Chatham street. From there it was stolen by Orvill Gardner, who was known as "Awful" Gardner, on the same night that Hyer had the fight in April, 1848, in a well-known restaraunt at the corner of Broadway and Park place, and was taken to the Gem, 324 Broadway.

It was taken from the Gem, Oct 20, 1850, to Sportsman's Hall on Elm street in Boston. From there it was taken by Harry Finnegan to Ed. Price's saloon on North street in Boston. Finnegan was Price's well-known barkeeper in 1851.

From Price's it was taken back to Sullivan's, then at 81½ Chatham street. There it was stolen again and taken to the Abbey on the Bloomingdale Road, Oct. 22, 1851. There Bill Polk secured it and gave it to a friend at a saloon called Stanwix Hall on Broadway.

Its next excursion was to St. Louis, where Johnny Robinson, a mulatto, who fought Barney Aaron at Riker's Island, New York, got it and brought it back to the metropolis. He gave it to Izzy Lazarus, who was keeping a saloon, called the New York saloon, in Buffalo.

Lazarus sent it to his son Harry Lazarus, who had a place on Chatham street. Afterward it was removed to his new saloon on East Houston street and was there at the time he was killed, Jan. 3, 1865, by his next-door neighbor, Barney Freeny, the partner of Rockey Moore in the saloon known as "the 40-40 Loan."

After that time it went the rounds of the old New York Fire Department. It has been in the hands of Bill Tweed, Mike Walsh, Tony Hyer and Joe Coburn. It has been in Kit Burns's and Harry Hill's places and was at last stolen from a member of Big Six. Nothing was known of it from that time until it was found in Red Leary's saloon after his arrest for the Northampton bank robbery.

This relic of old New York sporting life is a glass gilt sign with the word "Oysters" painted on it. The back of the sign is painted black. It has been sought after by old sporting men and members of the old Volunteer Fire Department of New York.

**Plant Reservoirs in the Desert.**

*From the Portland Telegram.*

Many a traveller in desert lands, when in danger of dying from thirst, has been saved by the plant known as the water, or fishhook cactus. During the moist season it stores up a large quantity of water for the subsequent dry one, when all the ground is parched with heat, and only channels filled with stones mark the course of former rivulets.

So well has this cactus provided for the safety of its precious liquid that it is no easy task to obtain it. The exterior skin is more impenetrable than the toughest leather, and, besides, it is protected with long, wiry spines curved into hooks at the end, yet so strong and springy that if a large rock be thrown against them they remain uninjured. If the spines be burned off, one may, by long and tedious effort, cut through the rind with a stout knife; otherwise nothing but an axe will enable him to get at the interior of this well-armored plant.

When the top is removed and a hollow made by scooping out some of the soft inner part, it immediately fills with water, cool and refreshing, though a blistering sun may have been beating upon the tough skin above it all day. The water, when first obtained, has a whitish or smoky tint, but when settled is as clear as crystal.